CLAIMS

What is claimed is:

1. A system, comprising:

a spontaneous data communication network having:

a set of mobile units, wherein each mobile unit in the set of mobile units includes a router to transmit and receive data packets from any other mobile unit in the set of mobile units, wherein at least one mobile unit includes an antenna in a light.

2. The system of claim 1, wherein each router is a home router to store and adjust home potentials of the home router, to receive and store neighbor potentials of neighboring routers, to determine ideal data packet flows using the home and neighbor potentials with an optimization of at least one of a merit function or a penalty function involving stochastic changes in topology in the spontaneous data communication network, and to receive and route data packets based on the home and neighbor potentials.

3. The system of claim 1,wherein each router implements at least one of an Open Shortest Path First (OSPF), Border Gateway Protocol (BGP), Routing Information Protocol (RIP), or Transport Control Protocol/Internet Protocol (TCP/IP).

4. The system of claim 1, further comprising a set of stationary units, wherein each stationary unit in the set of stationary units includes a router to transmit and receive data packets from any other stationary unit in the set of stationary units or any other mobile unit.

5. The system of claim 4, wherein each antenna transmits and receives data on at least one of an optical carrier, a radio frequency (RF) carrier, a microwave carrier, or an infrared (IR) carrier via free space.

6. The system of claim 5, wherein each router implements at least one of an Open Shortest Path First (OSPF), Border Gateway Protocol (BGP), Routing Information Protocol (RIP), or Transport Control Protocol/Internet Protocol (TCP/IP).

7. A system, comprising:

a spontaneous data communication network having:

a set of stationary units, wherein each stationary unit in the set of stationary units includes a router to transmit and receive data packets from any other stationary unit in the set of stationary units, wherein each router is a home router to store and adjust home potentials of the home router, to receive and store neighbor potentials of neighboring routers, to determine ideal data packet flows using the home and neighbor potentials with an optimization of at least one of a merit function or a penalty function involving stochastic changes in topology in the spontaneous data communication network, and to receive and route data packets based on the home and neighbor potentials.

8. The system of claim 7, wherein each router implements at least one of an Open Shortest Path First (OSPF), Border Gateway Protocol (BGP), Routing Information Protocol (RIP), or Transport Control Protocol/Internet Protocol (TCP/IP).

9. The system of claim 7, wherein at least one stationary unit in the set of stationary units includes furniture.

10. The system of claim 7, wherein at least one stationary unit in the set of stationary units includes equipment.

11. An apparatus, comprising:

a vehicle having:

an antenna located in a headlight or a taillight; and

a transceiver coupled to the antenna, the transceiver having a router to transmit and receive data packets.

12. The system of claim 11, wherein each router is a home router to store and adjust home potentials of the home router, to receive and store neighbor potentials of neighboring routers, to determine ideal data packet flows using the home and neighbor potentials with an optimization of at least one of a merit function or a penalty function involving stochastic changes in topology in the spontaneous data communication network, and to receive and route data packets based on the home and neighbor potentials.

13. The system of claim 7, wherein each router implements at least one of an Open Shortest Path First (OSPF), Border Gateway Protocol (BGP), Routing Information Protocol (RIP), or Transport Control Protocol/Internet Protocol (TCP/IP).

14. An apparatus, comprising:

a stationary unit having:

an antenna; and

a transceiver coupled to the antenna having a router to store and adjust its potentials, to receive and store a secondary set of potentials of routers in a secondary set of routers, to determine ideal data packet flows using the potentials with an optimization of at least one of a merit function or a penalty function involving stochastic changes in topology in a spontaneous data communication network, and to receive and route data packets based on the potentials.

15. The apparatus of claim 14, wherein the stationary unit is at least one of a piece of furniture or equipment.

16. The apparatus of claim 15, wherein the stationary unit is at least one of a road sign, an overpass, a bridge, a stoplight, a computer, a desk, a credenza, a cabinet, a telephone, a chair, a printer, a copier, a lamp, a light fixture, a thermostat, a computer, an architectural structure, a milling machine, a lathe, a drill press, a tool, a toolbox, a parts washer, a forklift, or a workbench.

17. The apparatus of claim 14, wherein each antenna transmits and receives data on at least one of an optical carrier, a radio frequency (RF) carrier, a microwave carrier, or an infrared (IR) carrier via free space.

18. A method, comprising:

transmitting data packets into free space from an antenna in at least one of a first vehicle headlight or taillight;

routing the data packets to at least one of a second vehicle headlight or taillight, a road sign, an overpass, a bridge, a stoplight, or a building; and

receiving the data packets from free space at an antenna in at least one of the second vehicle headlight or taillight, the road sign, an overpass, a bridge, a stoplight, or a building.

19. The method of claim 18, wherein transmitting data packets into free space from an antenna in at least one of a first vehicle headlight or taillight and receiving the data packets from free space at an antenna in at least one of the second vehicle headlight or taillight, the road sign, an overpass, a bridge, a stoplight, or a building comprises transmitting and receiving data packets on at least one of an optical carrier, a radio frequency (RF) carrier, a microwave carrier, or an infrared (IR) carrier via free space.

20. The method of claim 18, wherein routing the data packets to at least one of a second vehicle headlight or taillight, a road sign, an overpass, a bridge, a stoplight, or a building comprises at least one of receiving, storing, or adjusting potentials to determine ideal data packet flows with an optimization of a merit function or a penalty function involving stochastic changes in topology in a spontaneous data communication network, and routing data packets based on the potentials.

21. The method of claim 20, wherein routing the data packets to at least one of a second vehicle headlight or taillight, a road sign, an overpass, a bridge, a stoplight, or a building comprises implementing at least one of an Open Shortest Path First (OSPF), Border Gateway Protocol (BGP), Routing Information Protocol (RIP), or Transport Control Protocol/Internet Protocol (TCP/IP).

22. A system, comprising:

a spontaneous data communication network having:

a set of mobile units, wherein each mobile unit in the set of mobile units includes a router to transmit and receive data packets from any other mobile unit in the set of mobile units, wherein each router is a home router to store and adjust home potentials of the home router, to receive and store neighbor potentials of neighboring routers, to determine ideal data packet flows using the home and neighbor potentials with an optimization of at least one of a merit function or a penalty function involving stochastic changes in topology in the spontaneous data communication network, and to receive and route data packets based on the home and neighbor potentials.

23. The system of claim 22, wherein at least one mobile unit in the set of mobile units includes a bus, an automobile, a bicycle, a motorcycle, a train, a trolley, a ferry, or a truck.